bulletin

NATIONAL TUBERCULOSIS ASSOCIATION

OCTOBER 1958

This symbol is the trademark of the Atomic Age. It is used in research centers and industrial plants that produce or handle atomic materials. The spot in the center represents the atom; the three sides are the alpha, gamma, and beta rays, which the atom unleashes—radiation. Whatever its source, radiation should concern all public health workers (see pages 130 and 131).

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A Realistic Look at the Medical X-Ray

By Dr. William Sprunt

Associate Professor of Radiology, School of Medicine, University of North Carolina

During the past two years the public has learned of the hazards of medical and dental X-rays in a swift and terrifying manner. The educational campaign was opened by an unprecedented "Report to the Public" from the National Academy of Sciences, which dealt with the hazards of all types of penetrating radiations. The report emphasized that such radiations are dangerous and that medical and dental X-ray examinations provide the largest man-made source of irradiation to the public.

A hue and cry against medical and dental X-rays, the new hazard of civilization, was taken up by the press in reports that were sometimes sensational and not always accurate. Though the present-day reporting of this subject is more balanced, more and more people are questioning the safety of, and the need for, X-ray studies ordered by their physicians and dentists. In some instances, patients have refused to have examinations that might have been vital to their health or even their lives. The irrationality of such fears is illustrated by the 83-year-old woman who refused X-ray treatment for cancer because she had read that X-rays shorten life.

The fact that X-rays are dangerous has been well recognized for over 60 years; for more than 50 years efforts have been made to improve the safety of equipment, and for more than 30 years medical students have been taught the hazards of X-ray.

All penetrating radiations in large amounts can produce damage to the bone marrow resulting in leukemia, scarring and ulcerating of the skin, abnormalities of the unborn mammalian fetus while in the uterus, and cancer. Radiation can so damage the reproductive cells—the sperm and the ova—that abnormalities may be transmitted from parents to children to children's children. In small doses radiation may shorten life; in large doses it may produce death.

However, the medical and dental professions have always made use of dangerous tools and remedies. A knife can slip, every general anesthesia carries a risk, deaths are reported annually from penicillin, morphine produces an addiction worse than death. No prescription is needed to operate the juggernaut of our time—the automobile—and anyone with the courage to venture onto the highways of this nation need be little concerned with the relatively trifling perils of a diagnostic X-ray examination.

The publicity about the dangers of X-ray has been of some value in stimulating physicians, dentists, and private and public health agencies to take even more precautions than before with their patients and with those working with X-rays. The publicity has stimulated research for better equipment, which in the past two years has resulted in technical improvements that reduce exposure to patients by 30 to 50 per cent. The radiation hazards from medical and dental X-rays, which even now are below the limits of safety set by the National Academy of Sciences, will be reduced even more in the future.

It is fair to say without equivocation that the radiation risk involved in an expert diagnostic X-ray examination, which is required for sound medical reasons, is so small that it need not be considered.

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Radiological Health

What TB associations can do in this challenging new field

By Frank J. Gibson

Today we are uncomfortably concerned with the invisible world of ionizing radiation. All of us realize that a significant public health problem has developed as the result of increased exposure of the entire population to man-made radiation.

This problem presents a challenge to public health workers to promote and help develop radiological health programs that will reduce and maintain all exposure within estimated safe limits. Developing such programs is in no way inconsistent with simultaneously promoting the beneficial use, even the expanded use, of radiation sources. For example, stressing the appropriate, well-planned use of chest X-rays is not inconsistent with calling for reduction of any unnecessary exposure. Total exposure can be reduced without limiting the necessary uses of radiation.

Broader Knowledge Needed

As public health workers, we are familiar with the various estimates of radiation exposure from medical and dental facilities. For example, it is believed that the number of X-ray machines that serve the general public is over 150,000. Certainly, more than 25 million X-ray examinations and 100 million dental X-ray examinations are given each year. However, it is equally important that we begin to understand the extent of the other uses of radiation and radioactive elements in our own area.

As of 1957, about 300 reactors were built, were being built, or were being planned in the United States. The U.S. nuclear power reactor program at the present time has eight atomic power plants operating, five under construction, and eight being planned.

While some reactors are low-energy research instruments and some power reactors are relatively small, many are quite awesome. The Consolidated Edison Company's nuclear-fueled electric generating plant north of New York is being built on a 350-acre site. It requires a concrete-lined pit 70 feet deep and 250 feet in diameter to protect the region from radiation and explosion.

Stressing the need for an interest in all the uses of ionizing radiation and nuclear energy, and all phases of radiological health, does not mean that the radiation protection problems connected with medical and dental X-rays have been resolved to any great degree. Improved equipment, films, and techniques; monitoring; and proper coning, filtration, and shielding will continue to provide our greatest gains in reducing total exposure. Our primary responsibility and most concentrated efforts in radiation protection must continue to be in the medical and dental field. As tuberculosis workers, we want to be especially certain that chest X-ray equipment and facilities used in tuberculosis control are thoroughly checked and periodically monitored.

There is, however, a need for a broadened interest and activity in over-all radiological health, since all ionizing radiation sources are part of a total complex.

Radiological health is the art and

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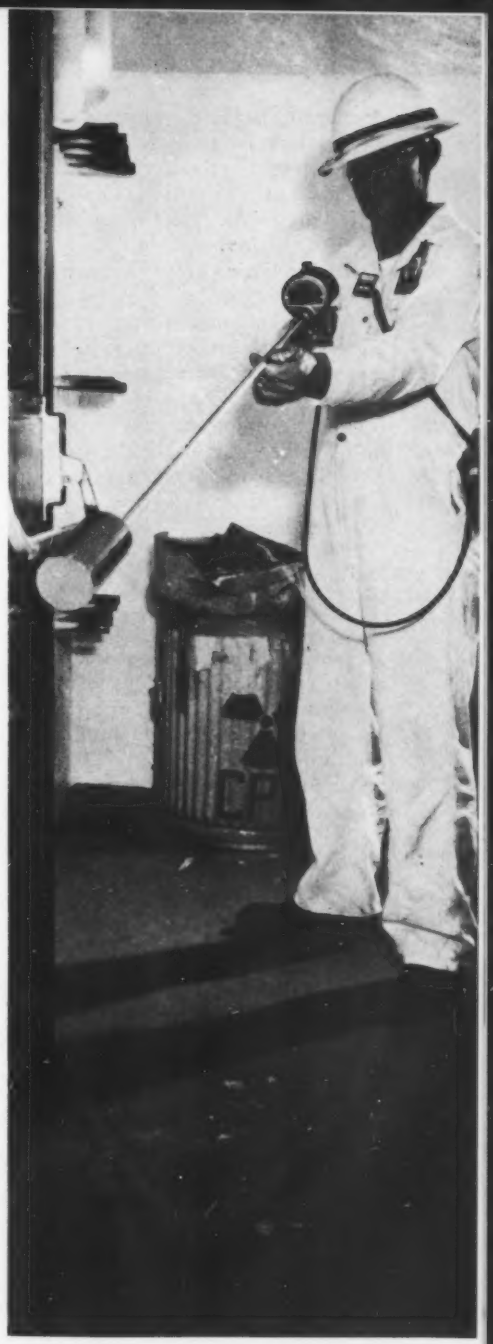

A health physicist measures radiation level at entrance to a maze of hot cells in the Chemical Processing Plant at the Atomic Energy Commission's National Reactor Testing Station in Idaho. The measurement determines whether the level of radioactivity has been brought down enough to permit workmen to enter the cells for maintenance work.

science of protecting human beings from injury by radiation. This definition might properly include the beneficial uses of radiation and radioactive materials. Most of us will not be directly involved in highly specialized radiation protection activities, such as monitoring. But no matter how complex some aspects of radiological health protection actually are, many representative community agencies and individuals are needed to promote, develop, and regulate radiation sources. Certainly the time has passed when users of radiation sources are the sole judges of protection standards.

Background Information

Familiarity with the language of the radiation physicist and background information about the nature, effects, and sources of exposure are the first steps in preparing to take an active role or interest in radiological health activity.

Among the excellent manuals available are the American College of Radiology's *A Practical Manual on the Medical and Dental Use of X-rays* and the American Public Health Association's *Public Exposure to Ionizing Radiations.*

Four splendid articles in the *American Journal of Public Health* relating public health principles to radiological health are "Radiological Health or Radiation Protection?" May, 1956; "Radiation and Human Health," June, 1957; "Radiation—A Major Public Health Problem," January, 1958; "Program Planning for Radiological Health," August, 1958. The March, 1958, *Public Health Reports* contains an important article, "Radiation as a Public Health Problem."

Review of the American Trudeau Society and U.S. Public Health Service statements on radiation and tuberculosis case finding will prove invaluable in developing perspective.

Tuberculosis associations' boards and staff should have an intimate knowledge of the general regulations, laws, and codes being developed to enforce health and safety standards in connection with ionizing radiation. As of March 31, 1958, 13 states required registration of radiation sources, eight had adopted radiation codes, and at least three had major action pending.

Space does not permit a full discussion of the sound principles involved in developing radiological health regulations. Two important considerations are provision of a vital role for the official health agency in radiation protection and provisions for inspection and enforcement. It is important to realize that laws and regulations are not the complete answer to control of any hazard. Education and involvement of representatives of many disciplines in planning and developing prevention programs are just as vital.

At the American Medical Association Annual Meeting, held in San Francisco in June, 592 physicians had chest X-rays as part of the exhibit "An Annual Physical Examination for Every M.D.," which was cosponsored by the National Tuberculosis Association. Of the 592 miniature films taken, 35 were read as lung lesion, 2 as cardiovascular, and 2 as other findings.

The American Public Health Association has available "Model State Radiation Protection Acts" prepared in cooperation with the Conference of State Sanitary Engineers and the Association of State and Territorial Health Officers. The new Radiological Health Division in the Bureau of State Services, PHS, will be an excellent source of information on the basic principles of radiological health regulations and other problems.

Public Must Be Alerted

Both individually and organizationally, tuberculosis association workers can contribute in many ways to the development and the operation of sound radiological health programs. Since exposure to the major sources of radiation is a relatively common experience, education of the general public is necessary to relieve concern, prevent unnecessary exposure, and develop a realistic appreciation of the beneficial use of radiation sources. The public must be alerted to the need for radiological health programs.

Equally important is helping to assure the dynamic role of the official health agency in radiological health. Public and individual health protection must be a vital consideration in the use of ionizing radiation. Unless official health agencies are promptly provided with adequate radiological health budgets, obtain a share of the few trained personnel now available, and are actively interested in radiation protection, they may be relegated to a secondary role.

Tuberculosis associations might in some instances assist in compiling information on the number of sources and, if possible, the amount of radiation to which the population in their area is exposed. This is the first step in assessing the radiation problem.

Since trained radiation specialists are scarce, official agencies will need help in recruiting and training radiological health personnel. Courses are already being held in some universities, such as the University of Michigan. The PHS is sponsoring a variety of training programs at the Robert A. Taft Sanitary Engineering Center, in Cincinnati. In some instances, state health departments are developing courses. Where budgets permit, tuberculosis association training grants could be helpful. Tuberculosis associations might also sponsor courses for tuberculosis control personnel in cooperation with official agencies.

Exposure to ionizing radiation is, and will continue to be, a serious health problem. Thus, radiological health must be a key activity in a modern community health program. Where programs do not exist, tuberculosis associations are urged to help promote and develop them. Associations might inquire about the progress of existing programs. Some are excellent. Others may appear good on paper, but in practice have limited budget and lack operating and inspection personnel and staff for administration and training.

In few public health problems has the need for prevention been so great. Community health protection requires concerted community action. Certainly every association will profit by meeting and exchanging information with those responsible for radiation protection in its community.

can we find LUNG CANCER while it is curable?

By Dr. Katharine R. Boucot

The only cure for lung cancer at present is resection while the tumor is still localized. The problem is to detect cancers while they are still in this "early" phase. In order to set up suitable screening programs, it is necessary to know the clinical and the radiological characteristics of early lung cancer. Little is known of its natural history. Most of our knowledge about lung cancer comes from surgeons who see patients late in the course of the disease, as evidenced by the fact that on the average only about 6 per cent of patients who undergo surgery survive for five years.

Tumors vary in behavior according to a number of factors. Squamous cell cancers, on the whole, are slow-growing lung cancers. Since these seem to be the neoplasms associated with exogenous carcinogens, this is a somewhat hopeful situation, because we can, presumably, take preventive measures. On the other hand, undifferentiated carcinomas of the lung tend to progress rapidly to a fatal termination.

Age and sex are other factors involved in the behavior of tumors. The outlook for older persons seems more favorable than for younger people. The prevalence of lung cancer is much greater among men than among women. Some people attribute this to differences in smoking habits, but this remains controversial. Hormonal factors could conceivably play a role.

So far as the clinical picture of early lung cancer is concerned, our knowledge of symptoms is limited. The symptoms reported among patients who undergo surgery are those of advanced cancer. In an effort to study whether or not early cancer is usually asymptomatic, and to analyze the chronological relationship between symptoms and X-ray abnormalities, the Philadelphia Pulmonary Neoplasm Research Project was begun in December, 1951. This study of 6,137 volunteer men over the age of 45 was at first sponsored only by the Philadelphia Tuberculosis and Health Association. Later, as the study expanded, it was cosponsored and supported in large part by the American Cancer Society.

Men over 45 were chosen because lung cancer is most prevalent in this group. While hemoptysis (spitting of blood) has been the most important symptom in relation to cancer found in this study, it occurred late.

In older men, where respiratory symptoms antedate recognizable X-ray changes, a single "negative" survey film is inadequate. Even careful radiological study may be insufficient. Bronchoscopy and bronchography are indicated before reassurance dare be given, and even if all findings appear normal, careful clinical and radiological follow-up are in order. Many are the men with inoperable lung cancer who give a history of "virus pneumonia." Every older man with pneumonia should be suspected of having an underlying lung cancer even if he responds to antimicrobial therapy—just as we suspect every younger man with pleural effusion of having tuberculosis until proven otherwise.

At this time the only approach to the detection of lung cancer in asymptomatic persons is through periodic chest X-rays. In a series of 250 consecutive proven lung cancer cases from two official Philadelphia photofluorographic screening units, the prognosis has been better than that reported by most thoracic surgeons—a 17 per cent five-year survival rate compared to an average of 6 per cent in surgical series.

What is the earliest radiological appearance of lung cancer? Of the 250 lung cancer cases referred to above, 74 had earlier "negative" films available for review. Twenty-three of these remained negative even after retrospective review. However, the other 51 films were deemed to have been erroneously interpreted as normal at the site where the future cancer developed. Some of these 51 cancer patients had more than one erroneous negative film before the lesion was recognized.

In order to classify a given tumor

Dr. Boucot is clinical professor of medicine and professor of preventive medicine at the Woman's Medical College of Pennsylvania. She received her medical degree from the Woman's Medical College of Pennsylvania and a master's degree in public health at Johns Hopkins School of Hygiene and Public Health. Dr. Boucot represented the National Tuberculosis Association and the American Trudeau Society at the Third International Congress of Photofluorography, which met in Sweden last summer, and addressed the Congress on "The Early Detection of Bronchial Cancer." Her article was solicited by the ATS Committee on Medical and Public Relations.

as "early" in its radiological course, a point of beginning must be sought. At the Third International Congress on Photofluorography, in Stockholm, held in August, 1958, we proposed that lung cancer be classified radiologically as "early" only if there were available a true negative chest X-ray not more than one year before the first abnormal roentgenogram. Of the 250 cancer cases referred to, only 19 satisfied this criterion.

The radiological appearance of such early cancer is variable, usually unimpressive, and sometimes fluctuating. Two general patterns emerge—one in which the first lesion appears as a solitary nodule, near the outside surface of the lung, the other in which the first abnormality is at the root of the lung and produces X-ray signs either there or farther out.

Two-thirds of the small group of 19 "early" cases from the official Philadelphia surveys arose centrally. Only one of the lesions originating peripherally as a solitary nodule was recognized at the time of its first appearance. In fact, peripheral nodules appearing within one year of a true negative photofluorogram were so small as to be visible only when the site was recognized through the subsequent course and when viewed by means of magnification. Not one could be satisfactorily reproduced for viewing with the naked eye. This causes one to speculate as to whether it will ever be feasible to detect early lesions of this type under field conditions. This is of great practical importance, since patients with solitary nodules have the best prognosis.

Certainly, steps can be taken to minimize the number of early lesions missed. Poor technique accounted for the understandable missing of some lesions. Meticulous supervision of technique can reduce errors due to overexposure and underexposure. A second cause for error was the propinquity to large nearby structures or even obscuration by such structures. The taking of expiratory as well as inspiratory films of older men is helpful by making available two projections at different angles.

In survey work, fatigue or boredom of the film reader can be minimized by rest periods, by change of work, and, with the reader's knowledge, by the random introduction of phantom "nodules" to enhance alertness. A screening history should be taken on older men reporting for survey films and should be available at the time of film reading.

When symptoms are present in cases where photofluorograms are apparently normal, it is important to apprise the film reader of their presence. No procedure is more successful in heightening a reader's index of suspicion than routine retrospective review of all cancer cases. To do this, a good follow-up is necessary so that the survey unit will be notified of cancer cases on whom survey films are available.

Since rate of tumor growth is of prime importance in prognosis, and since an impressive proportion of lung cancers are relatively slow-growing, routine semiannual chest X-rays of men in the cancer age is urged. The current hysteria over radiation hazards is doing a great disservice to older men, in whom the danger of fatal cancer certainly is much greater than the very remote possibility of leukemia or bone tumor from exposure to two chest X-rays each year.

Finally, it cannot be stressed too strongly that X-ray detection of early cancer is largely wasted unless it is followed by *immediate* clinical investigation and resection if it is indicated.

The answer to the question propounded in the title, "can we find lung cancer while it is curable?," although qualified by "not always," is "much more often than we do."

Report on TB Blood Test

Due to the generosity of tuberculosis associations in 25 states and territories, an intensive study of the Parlett-Youmans blood test for tuberculosis is under way, and it is expected that within a few months it will be possible to determine whether this test is the long-sought practical, simple, and accurate method of detecting active tuberculosis.

The associations had responded, as of September 1, with special contributions of more than $37,000 after an appeal from the Medical Research Division of the American Trudeau Society for support in sponsoring a large-scale trial of the test, developed by Drs. Robert C. Parlett and Guy P. Youmans and associates of Northwestern University Medical School, Chicago, while working under a Christmas Seal grant from the National Tuberculosis Association. Known as a gel double-diffusion precipitation technique, the test is based on the principle that antibodies in the blood serum of persons with tuberculosis will cause precipitation when they meet antigens from virulent tubercle bacilli present in a specially prepared, gelatinelike substance.

Preliminary results with the test were so promising that the Medical Research Division proposed a large-scale study to speed up a final evaluation. Twenty-two investigators from all sections of the country have joined the study and are sending samples of blood from patients with various diseases—or no disease—to the Chicago laboratory, so that all the testing will be done under identical circumstances. The samples carry only a code number, not the name of the donor or investigator. The investigator, however, sends to the NTA a card giving full information about the sample. Dr. Parlett, in turn, after testing the sample, sends the NTA the results under the code number of the sample.

Since no funds were available in the Medical Research budget to finance the study, the special appeal was made. The associations that responded are in Alabama, Connecticut, Delaware, Florida, Idaho, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Mississippi, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Texas, Washington, and Wyoming, and also Guam and Hawaii.

Selecting the Christmas Seal Design

Would you like to have the responsibility of selecting the Christmas Seal design? Perhaps some people would reply in the affirmative, but the majority, it seems, would not want to take on this task as a single responsibility.

Actually, the selection of the Christmas Seal design is *not* the responsibility of one individual. Experience has taught us that it is advisable to involve many individuals and to seek advice and counsel from various professional fields before a final decision is made.

The National Tuberculosis Association, in cooperation with the Campaign Committee of the National Conference of Tuberculosis Workers, has developed a comprehensive plan of operation for the selection of a Christmas Seal design. This plan has been followed for the past few years with tremendous success. It sets up several safeguards to insure that the design selected will be of the highest caliber and in keeping with the dignity and integrity of Seals selected over the years.

The total plan revolves around the Campaign Committee of the NCTW, whose seven members have the responsibility of recommending to the NTA the Christmas Seal design for a given campaign. Before such a recommendation is made, many steps are taken to assure both the quantity and the quality of designs available for the committee's consideration.

Tuberculosis associations play a major part each year in supplying designs. Using the attractive pamphlet "A Call for Artists" with local artists, art groups, and art schools, they really harvest the art talent of the nation in behalf of the Christmas Seal. This pamphlet, which can be secured without charge from the NTA Christmas Seal Sale Division, gives a short history of the Christmas Seal, specifications on drawing a Seal, and instructions on submitting designs.

Besides these free-lance contributions, the NTA Christmas Seal Sale Division commissions a minimum of three artists each year to submit designs, to assure the availability of professionally done Seal designs. These artists receive only a token payment, and it has been very encouraging to see their willingness to do this work for the tuberculosis associations.

Another preparatory procedure is the stockpiling of designs. These particular designs consist of commissioned work of previous years and free-lance designs that were judged among the top ten in previous years and that the artists permitted the NTA to retain.

Thus, when the NCTW Campaign Committee meets to recommend a Christmas Seal design, they have available to them Seal designs submitted on a free-lance basis, Seal designs submitted by the commissioned artists, and Seal designs which have been stockpiled over the years.

Before the NCTW Campaign Committee meets, various important procedures are followed. One of particular interest and importance usually takes place the day before the committee meeting. At that time a group of "outside experts" review the designs on hand. This group of topflight professional people do not select the final design, but they give freely of their time, training, and knowledge.

The outside experts represent a cross-section of the art and production fields. As an indication of the caliber of these people, following are the individuals who served on the 1957 outside-expert panel: F. D'Esposito, art department manager; Edward Fortuna, assistant art director, *American Home* Magazine; Len Fellows, art director, McCann-Erickson, Inc.; Ronald Johnstone, art director, and John F. Aldinger, production manager, Young and Rubicam, Inc.; Arthur Barnes and Raymond Buchanan, Bingham Photo Engraving Co.; Harry Richardson, Eastern Colortype Corporation; Thomas C. Hurley, president, and Thomas Ratcliffe, art director, Hurley Associates; Bradbury Thompson, art director, *Mademoiselle* Magazine.

The chairman of the NCTW Campaign Committee attends the meeting of the outside experts, as does the executive director of the Conference. Other representation includes the NTA Christmas Seal Sale and Public Rela-

By Clarence W. Kehoe

Mr. Kehoe is director of the Christmas Seal Sale Division of the National Tuberculosis Association. His article was solicited by the Governing Council of the National Conference of Tuberculosis Workers.

tions Divisions and the NTA Executive Office.

The outside experts comment on the various art pieces from the vantage point of their respective training and experience, and answer questions from the NTA and NCTW representatives. These comments, opinions, and answers are recorded and brought at an appropriate time to the entire membership of the NCTW Campaign Committee.

It is interesting to note that when the selection committee met six years ago to choose a Seal, less than 10 designs were on hand, and all of them were from commissioned artists. Through the help of the tuberculosis associations and the use of "A Call for Artists," the number of designs has increased each year. When the Campaign Committee met in October, 1957, to select the 1959 Seal design, approximately 500 pieces of art work were on hand. It is anticipated that an even greater number of designs will be available for the committee meeting in October, 1958, when the members will consider the recommendation for the 1960 Seal. Because of the time involved in setting up production, the committee selects a design that will be used two years later.

Making the Selection

A minimum of two days is devoted by the committee to making a final decision on the Christmas Seal design. All designs which come to the NTA Chistmas Seal Sale Division are brought before the committee. There is no "weeding out" by the National office.

When the committee meets, all the designs are on display. Each design is studied by each member of the committee, who works on an individual basis. Then the first selection of designs takes place, with each committee member choosing as many designs as he thinks have possibilities for the Christmas Seal.

In this first selection step, as well as throughout the entire procedure, the committee members are given as much time as desired. There is no pressure and no time schedule to meet. The first selection step may take several hours. When it is completed, the committee may have as many as 200 designs left to consider. These designs are then displayed again for further study and evaluation by the members. This procedure is repeated again and again, until the committee reduces the designs to the top ten pieces of art work.

During the entire selection period, the committee members may consult, if they desire, with representatives of the NTA Supply Service, Public Relations Division, and Christmas Seal Sale Division.

From the top ten pieces of art work comes the number-one selection for the Christmas Seal. These designs are discussed from all possible angles, including eye appeal; color; human interest; and possibilities for use in newspapers and magazines, on radio and TV, in window displays, in opening stunts, etc. Eliminations take place until the committee reaches a decision on what is considered the top design.

The name of the winning designer, who receives an award of $500, is never announced immediately. The artist is contacted to secure a notarized statement from him that the art work is original. Further, the committee usually recommends a few minor changes in the art work, and it must be ascertained if the artist agrees with these recommendations.

Not only the quantity but the quality of art work submitted by free-lance artists has showed a tremendous growth during the past few years. This is evident in the fact that the Christmas Seals for 1956, 1957, 1958, and 1959 were all submitted on a free-lance basis.

Another recent innovation is the award of Certificates of Special Recognition to the artists, exclusive of the commissioned artists, whose work is in the final top-ten designs. Tuberculosis associations who have had artists in their area win Certificates have secured excellent newspaper, radio, and TV publicity on these awards. The Certificates have been presented at special events and at luncheons, and in one state the governor awarded the Certificates.

Imagine the publicity possibilities open to your association if the designer of a Christmas Seal resided in your territory. It could happen to you!

Approximately 350 persons a day stopped to look at the two National Tuberculosis Association exhibits, "TB Respects No Age" and "Score Yourself," at the New York Health Show, held in New York City's Coliseum August 6-23. Obviously, no better scores could have been made than by the foursome above, l. to r.: James G. Stone, NTA executive secretary; Dr. Floyd Feldmann, NTA medical director; Sol Lifson, director, and Edward Sierks, associate, of the NTA's Health Education Division.

What Is Social Research?

By Donald A. Trauger

Research is one of the ways man has discovered to help him in his search for knowledge about himself and the world in which he lives. There are no arbitrary and specific dividing lines between the various branches of research. Social research is simply that part of research directed toward adding to our knowledge about man as a human being in relation to the social forces with which he interacts. Social research in tuberculosis is a small tributary of the main stream of research and deals with how people vary in the way they are affected by TB.

Much of the confusion that exists about research is the result of varied uses of the word. The man who goes to the library, and the man who hunts under the bureau for an elusive cuff link, may both say they are doing research. A scientist, however, usually reserves the word "research" to designate the search for additions to the general body of knowledge. He also distinguishes between adding to the body of knowledge and the teaching or the application of knowledge.

Differing opinions about how man adds to knowledge causes confusion. Some prefer ways of securing knowledge that are occult and mysterious. The methods of research and scientific inquiry are more closely related to the methods of common sense.

The common-sense approach is to look and see, to test and try out. In scientific circles, there is little emphasis on authority or popularity. There is heavy emphasis on critical examination of methods used in arriving at findings reported. A scientist is as careful to set up trials that may destroy his theory as to look for data consistent with his theory.

The language of science is of utmost importance, as the following examples illustrate.

"The relapse rate has become inconsequential since the advent of chemotherapy." This is an unscientific remark, which may mean many things to many people and may gain uncritical acceptance. In a scientific report, one might expect such a statement: "Between 1950 and 1953, based on 2,500 person-years of observations, the relapse rate declined from 15 per cent during the first year of observation to 10 per cent during the third year."

Only the second statement is subject to evaluation. Even that does not define "relapse."

Social Research and TB

The interest of the National Tuberculosis Association in social research is not hard to discover. No careful student can fail to be impressed by the long-term decline in the tuberculosis epidemic. Furthermore, some qualified students question how much the newer drugs used in treatment have hastened that decline, and ascribe the decline to social and biological reasons, such as improved environmental conditions and the development of a resistant population through natural selection.

Those who are impressed with such observations believe that more effort should be expended in the search for increased knowledge of these improved environmental conditions associated with less tuberculosis. These same people wonder if it is wise to put major emphasis on medical research when environmental improvement seems more effective in reducing the tuberculosis problem.

There is no necessary conflict between medical research and social research. In each field, it is difficult to think of a research activity that has meaning only for tuberculosis or tuberculosis control. Traditionally, there are no secrets and no patents in research. What one man discovers becomes the property of all men.

In a technical sense, social research is not as highly developed as some older branches of research. One reason for the comparative lag in social research is that the number of competent investigators is small compared with the number in many other areas of research. Also, the subject matter of social research embodies certain difficulties not present in other lines of inquiry. Clear-cut controlled experiments are difficult to arrange because of difficulties in controlling the environment. Our social and personal values are often involved. A Kinsey encounters all sorts of difficulties in pursuing his inquiries which are not encountered in an investigation of the reproduction of an earthworm.

Also, because we are humans, we are concerned with the importance of small differences. It may be easier in most cases to classify a bacillus as pathogenic or nonpathogenic than to classify a person as recalcitrant or nonrecalcitrant, because of the difficulties of definition and observation.

Despite difficulties, there is considerable activity in social research. A recent report, entitled "Current Social Research," prepared for the Secretary of the Department of Health, Education, and Welfare, constitutes a selected inventory of 372 projects regarded as typical of more than 2,000 projects reviewed in the course of the study. They cover a subject matter related to health, rehabilitation, welfare, behavior, and socioeconomic problems.

In another report by the National Science Foundation, it is estimated that more than $16 million was spent for social research by nonprofit institutions in 1953-54. In 1957, it was estimated that $4.5 million was spent by the Federal Government for social research. Much of this activity produces findings that are basic to understanding behavior in relation to tuberculosis.

Defining social research as that which social research workers do leads to confusion, because most workers in the field are not engaged in full-time research activities. In the National Tuberculosis Association Social Re-

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search Division, much of the small amount of staff time available must be devoted to supplying information, consulting on the development and conduct of statistical fact finding, and analytical activities. In addition, researchers employed in organizations primarily concerned with matters other than research are called upon to help apply the findings of research to the activities of the organization. This is true in the field of voluntary tuberculosis control.

The question of how research findings can be applied reveals the problems of an age of specialization. Typically, the people who do research are not concerned with the application of their findings. One reason for this is the difficulty of foreseeing all of the ways in which a particular finding can be used. Another reason is that this is a complex world, and people and organizations tend to specialize. An individual may be able to do research and also be able to teach, direct, and administer—but not at the same time.

An example of how knowledge can be used in tuberculosis control can be readily constructed. Each year a sizable number of persons die of tuberculosis not previously reported to health departments. If an investigation were made of these cases, the findings might enable us to improve our case-finding techniques and our case-reporting performance. This would not come about automatically, however. Obviously, if knowledge is to be put to use, it is necessary to have people who have the wits and the inclination to do so.

The NTA social research staff provides consultation on request regarding projects of constituent or local associations. In addition, it may be necessary in the future for the NTA to develop and conduct special research projects, by employing temporary staff persons and using money from foundations or government or by contracting with research organizations.

What is the appropriate role for the NTA in the field of research? In a nation which currently spends billions of dollars annually for research, even if the entire proceeds of the Christmas Seal Sale were put into research, the NTA's contribution would not be a major one.

In the social research field, the NTA program may need to proceed along a different course from that followed in its medical research program. The latter program receives and acts upon applications for financial aid from established investigators in hospitals, universities, and research centers. The limited amount of money available for social research in tuberculosis associations, the comparative scarcity of competent investigators, and the recency of the NTA's concern in this field limit the use of the application-grant process and make it imperative that new ways be developed for getting social research done.

What the NTA can do, and does, is to help improve the general climate for research. In addition to the moneys budgeted for research and, perhaps more important, through THE AMERICAN REVIEW OF TUBERCULOSIS AND PULMONARY DISEASES and other means, the NTA provides added room in the market place for the interchange of ideas on a scientific level. Research is promoted by whatever frees and enables a researcher to make his inquiries and to advance theory by publication, discussion, and studious inquiry. In these areas, the part played by the NTA is difficult to evaluate, but in general, sentiment leans toward increasing the NTA's research role rather than diminishing it.

State and local associations can play an important role in support of social research. While it is true that they will rarely have on their staff people competent to conduct social research, they can apply such information as is available with skill and imagination. They can learn about the social research resources in their area, if any, and explore ways, financial or otherwise, to help make full use of such resources.

Finally, associations can aid social research by studying the aims, the methods, and the history of science, and by supporting the national program financially. Wider understanding is vital to any substantial increase of social research activities. In the final analysis, however, real increase will depend upon the increase in the number of highly qualified investigators in the field. This will take not only money, but time and a set of social attitudes that will make careers in research more attractive than at present.

The Buffalo and Erie County (N.Y.) Tuberculosis Association has devised an effective award for local citizens who have performed various services in the tuberculosis control movement. The two sides of the National Tuberculosis Association's new medallion are affixed to a plaque, together with a plate inscribed with the name of the recipient and the dates of his years of service to tuberculosis control.

TB Control Around the Globe

A firsthand report of recent meetings and discussions on tuberculosis in England, France, Scotland, and Ireland

By Agnes Fahy

Science Writer, Public Relations Division National Tuberculosis Association

Time out from the IUAT Council meeting for a stroll on the streets of Paris for U.S. delegates (left to right) Dr. William Morgan, past president, NTA; Dr. Daniel E. Jenkins, ATS president, Dr. James E. Perkins, NTA managing director, L. L. Taylor, NCTW president, and Dr. Mario Fischer, NTA president. Here, on San Michel.

The doctor from Africa wanted a drug to go with streptomycin that could be given by injection. . . .

The investigator from Dublin was puzzling over which of several compounds to study first. . . .

The health officer in London advocated a law against cigarette smoking on the underground. . . .

The panel in Paris discussed how best to interpret laboratory tests of new drugs. . . .

The tea in the dispensary in Edinburgh was tops.

This science writer, who took a busman's holiday last summer to attend international gatherings of tuberculosis workers and to visit tuberculosis centers in other lands, was impressed not only by the magnitude of the world tuberculosis problem, but also by the variations on the basic needs that come to light as East discusses the tuberculosis problem with the West, as a delegate from a Southern country queries the North on preventive measures.

The doctor working against great odds in Africa brought up his problem during one of the numerous social functions that followed the scientific and public health sessions at the Commonwealth Chest Conference in London early in July. He wanted two good drugs to use in treating his tuberculosis patients, as do most chest physicians in the United States. But whereas our doctors talk of another drug that can be taken by mouth, as isoniazid is (and PAS, too, but it is difficult for some patients to take), the doctor from Africa wanted another drug to be given intramuscularly, like streptomycin.

"But why?" he was asked.

"Because my patients do not think they have been treated unless you stick a needle in them" was the reply.

The Commonwealth conference, sponsored by the National Association for the Prevention of Tuberculosis, the British counterpart of the National Tuberculosis Association, had brought together delegates from all corners of the world. The British Tuberculosis Association, the medical group corresponding to the American Trudeau Society, for the first time held its annual conference in conjunction with the NAPT, which has recently broadened its program to include diseases of the chest and heart.

A number of Americans participated

in the sessions. Among them were Dr. Daniel E. Jenkins, ATS president; Dr. Julius L. Wilson, ATS director of medical education; Dr. Sidney Shipman, former NTA president; Dr. J. Maxwell Chamberlain, New York thoracic surgeon; Dr. Harold L. Israel, University of Pennsylvania; Dr. John F. Briggs, University of Minnesota; and Kermit Harrington, field representative, Tennessee Tuberculosis Association. Dr. James E. Perkins, managing director of the NTA, and Dr. Walsh McDermott, editor of THE AMERICAN REVIEW OF TUBERCULOSIS AND PULMONARY DISEASES, attended the conference.

One becomes conscious of differences in approaches as well as similarities in problems on the two sides of the Atlantic. In the Commonwealth countries, where the incidence of tuberculosis is generally higher than in the United States, there is greater emphasis on the mass use of BCG in preventive programs than here; apparently less interest in the possibilities of isoniazid as a prophylaxis than in this country. Domiciliary care, as the British call home care, is controversial there as here.

The British present a solid front on the relationship between lung cancer and cigarette smoking. The physicians are convinced the relationship exists. Their problem is how to convince the public—thus the suggestion that smoking be prohibited in the London underground, where smoking is now permitted on some cars, and in other public places.

If there were slight differences on certain aspects of tuberculosis control, there was unanimity about the magnitude of the problem itself. This was particularly evident when Dr. Johannes Holm, chief of the Tuberculosis Section of the World Health Organization, spoke. Dr. Holm estimated that between 0.5 and one per cent of the adult population of the world is discharging tubercle bacilli and therefore can be considered infectious; and that half of the children of the world are tuberculin positive by the time they reach adulthood.

The present objective of WHO is elimination of tuberculosis as a *public health problem,* according to Dr. Holm, who distinguished between this objective and eradication. If tuberculosis was eliminated as a public health problem, he explained, it would mean that the prevalence and incidence of tuberculosis had been brought down to such a low level that existing public health facilities in a community could take care of the situation, with no special tuberculosis control organization necessary. No community in the world, he added, has yet succeeded in achieving this goal.

From the London conference it was only a step across the English Channel to the meeting of the Council of the International Union Against Tuberculosis, in Paris.

The International Union, which is comparable in the international field to the NTA in the national field (whereas WHO is a strictly governmental organization), has its permanent headquarters in Paris. The Council meets annually, as does the executive committee, and the business sessions are followed by scientific sessions. The various technical committees, such as laboratory, antimicrobial, and rehabilitation, carry on their work throughout the year and report annually to the Council.

The NTA was represented by Dr. Mario Fischer, president; Dr. William Morgan, immediate past president and chairman of the NTA Committee on International Affairs; Dr. Daniel E. Jenkins; L. L. Taylor, president of the National Conference of Tuberculosis Workers; and Dr. James E. Perkins, who is also a member of the executive committee. Dr. Walsh McDermott attended as a consultant.

The scientific sessions consisted of two symposiums on subjects related to the evaluation of new drugs. Dr. Gladys Hobby, of the Research Division of Chas. Pfizer & Co., Inc., moderated one on laboratory and clinical aspects of new drugs. Dr. McDermott served as comoderator. Professor John Crofton, of Edinburgh, moderated the other symposium, which was concerned with clinical methods of evaluating new drugs.

Three New Drugs

While the principal purpose of the symposium moderated by Dr. Hobby was to discuss the validity of laboratory tests as a guide to the potential efficacy of the drug in treating patients (it was brought out that each type of drug requires its own technique), reports were made on three new antituberculous drugs which are under study in as many countries.

One of the drugs is presently tagged "1314" to simplify matters. Its chemical name is alpha-ethylisonicotinic thioamide and it is from the same family of chemicals that produced isoniazid and pyrazinamide. It was discussed by Dr. Noel Rist, of the Pasteur Institute, Paris. Professor Georges Brouet, Paris clinician, brought out that certain problems of toxicity must be solved if it is to be used successfully in treating patients.

Dr. R. J. W. Rees, of the Medical Research Council of Great Britain, reported on experimental work with a drug based on a different principle from the usual concept of activity against the disease-producing agent. The drug in question is called macrocyclon. A surface-acting agent, it does not prohibit the multiplication of tubercle bacilli in the test tube, but is active against experimental tuberculosis in mice, presumably by enhancing the animal's resistance. Preliminary trials with the drug in patients with advanced disease, however, have not

Her Grace, the Duchess of Portland, and chairman of the NAPT Council, with ATS president Dr. Jenkins at the Commonwealth Chest Conference.

as yet produced satisfactory results.

Dr. Vincent C. Barry, of the Medical Research Council of Ireland, reported on work with rimino compounds. These compounds are derived from phenazine pigment, a red dye. The studies are still in a preliminary stage. An unusual feature is that some of the compounds remain active for an extraordinarily long period, apparently due to storage in fatty tissues.

Dr. Barry, a chemist, and his group developed hinconstarch, a combination of isoniazid and a thiosemicarbazone on a potato starch base. Prior to the Paris meeting, in talking to this writer about the rimino compounds at Trinity College, Dublin, Dr. Barry said they were trying to determine which of the compounds to put through exhaustive tests necessary for an evaluation of the drug. Naturally, they want to pick a winner the first time, but at the moment it was difficult to tell which molecular structure held an advantage over the other.

As Dr. Barry talked in the library of his laboratory, the rain that makes the grass of Ireland so green was pouring down, but inside, the chill evaporated as the kettle boiled for tea.

Visit to Scotland

It's a nice habit they have in these islands, of taking their science with their tea. This visitor had been introduced to it in Edinburgh, when a search for the first tuberculosis clinic in the world led to the Royal Victoria Dispensary for Diseases of the Chest, successor to the dispensary founded by Sir Robert Philip, in 1887. The dispensary is now the center of the tuberculosis control program in the Scottish city. It has outgrown its original location—three small rooms on Bank Street—and occupies an entire building in the old part of town.

Sister Euphemia, the nurse who serves as lady superintendent and who had worked with Sir Robert before his death, played hostess on a tour of the clinic and also at the tea table in the basement, where, eventually, one member of the staff after another dropped by for a cup of the steaming brew—and lingered to talk over the events of the day and to speculate on what the morrow would bring in the fight against tuberculosis.

NTA Board Committees

. . . their purpose and functions

Executive Committee

Established and authorized under the bylaws of the National Tuberculosis Association, the Executive Committee of the NTA is composed of the president, the president-elect, the retiring president, two vice presidents, the treasurer, and the secretary, as well as six members who are elected by the Board from its membership.

The six members fall into two groups of three each—each group being elected annually for terms of two years. None of the six members elected by the Board from its membership who have served two consecutive terms on the Executive Committee shall be eligible for re-election to the same position until one year has elapsed.

In addition to the members of the committee, the presidents and presidents-elect of the American Trudeau Society and the National Conference of Tuberculosis Workers and representatives of the U.S. Public Health Service and the Veterans Administration tuberculosis programs are regularly in attendance at meetings of the committee.

As in most organizations, the Executive Committee is empowered by the bylaws to exercise all powers of the Board of Directors when the Board is not in session. To facilitate its fulfilling this responsibility, the committee meets upon the call of the president or on request of any five members of the committee.

In practice, the committee meets regularly in the fall of each year, between the spring and midwinter meetings of the Board.

The committee tries to avoid exercising its powers on matters of broad policy, preferring to have the full Board of Directors assume this responsibility if an immediate decision does not have to be made. Other matters may be referred to regular committees. For example, the Executive Committee discussed the method by which nominations to the Board are made, and whether there should be a planned system of Board rotation, and referred the matter to the Nominating Committee for report to the Board.

Each year the committee appoints legal counsel and also selects the location for the Annual Meeting. The committee has discussed the requirements for the Annual Meeting and has established principles to govern the selection of the city for this meeting. It has also discussed the advantages and disadvantages of holding the meeting biennially rather than annually.

Each fall the committee receives reports on activities from the staff of the NTA, from the ATS, the NCTW, the PHS, and the VA.

The committee also handles matters of policy governing administrative problems of the national office, such as retirement policy, insurance programs, investment and accounting procedures.

This Year's Members

During the present fiscal year the following persons are members of this committee: Mario Fischer, M.D., Duluth, Minn., president; H. McLeod Riggins, M.D., New York City, president-elect; John H. Biddle, Huntingdon, Pa., and William L. Cooke, M.D., Charleston, W. Va., vice presidents; Mrs. Wallace B. White, Brooklyn, N.Y., secretary; J. Douglas Colman, New York City, treasurer; and William M. Morgan, Ph.D., Alliance, Ohio, past president. Other Executive Committee members include: Herbert C. DeYoung, Chicago; John F. Gardiner, M.D., Omaha, Nebr.; Elliott Mendenhall, M.D., Dallas, Texas; Julian C. Sipple, Savannah, Ga.; Wendell L. Van Loan, Corvallis, Ore.; and Joe K. White, Noblesville, Ind.

ATS Statements . . . *on home care*

The advantages and disadvantages of prolonged hospitalization and of home care for patients with tuberculosis are discussed in a statement by the ATS Committee on Therapy. Features necessary for adequate care for selected patients should include:

1. *Preliminary Hospitalization*

This committee believes hospitalization is an essential part of the treatment of all forms of active tuberculosis. All patients should be urged to accept hospitalization as soon as the need for treatment is established. Hospitalization should continue until:

A. Diagnostic procedures adequate for the evaluation of the entire patient and his disease have been completed.

B. Chemotherapy has been instituted and the patient's tolerance to the drugs prescribed has been determined.

C. Symptoms, if any, have been controlled.

D. Communicability of the disease is believed to have been adequately diminished for the patient's circumstances.

E. It has been determined that home conditions are adequate for care of the patient, and the patient has demonstrated an attitude of trustworthiness and cooperation.

F. It has been determined that the family is not only capable but is *desirous* of caring for the patient and will make the sacrifices which home care requires.

G. The patient has been well instructed about his disease and its treatment, including the development of good dietary habits and good habits of personal hygiene.

H. Uninterrupted medical care is assured including regular visits to the physician or house calls if indicated.

2. *Medical Care at Home*

Adequate medical attention requires regular and frequent visits between patient and physician. Medical house call services should be available for care of acute intercurrent illnesses. The status of the tuberculous infection should be re-evaluated following such intercurrent illnesses. Whenever possible, the same physician should continue with each patient over a period of years to insure a consistent, long-term chemotherapeutic treatment program. Where more than one physician is involved in the care of a patient or where the patient is being transferred from the care of one physician to another, responsibility for maintaining the patient on continuous, adequate treatment for the tuberculosis must be prearranged and clearly defined. In the ideal situation, the physician in charge during the preliminary hospitalization should be in charge of the home care program. Home care does not necessarily shorten the total period of disability. The physician supervising home care should discourage premature return to work.

3. *Recurring Hospital Readmissions*

Patients under treatment at home should have available to them the diagnostic and consultative services of the modern hospital or clinic. Routine periodic readmissions to the hospital for a few days may be necessary. Re-evaluation by radiologic, bacteriologic, clinical, and laboratory procedures should be followed by presentation at a staff conference. Included in this conference group should be surgeons who would help to determine when and if surgical procedures might be undertaken.

4. *Special Services for Home Care Patients*

Social workers, occupational therapy workers, school teachers, rehabilitation workers, and other patient counselors provide many advantages to hospital care. When needed, these services and those of the public health nurse should be available to patients at home.

5. *The Private Physician and Home Care*

A. It should be the aim of any program to delegate to the patient's personal private physician as much of the responsibility for medical care as possible. A private physician well indoctrinated in the care of tuberculosis could supervise the patient's home care. If the patient's private physician does not conduct long-term outpatient treatment of tuberculosis, he should be kept well informed of the patient's progress, be consulted with in the event of intercurrent illness, and take over complete care when the treatment of the tuberculosis has been completed.

B. Under some circumstances, private home care and private office care of medically indigent patients at the expense of public funds may be preferable to institutional care (or "clinic" care) when private physicians well experienced in the modern chemotherapy of tuberculosis are available.

C. It is essential that the attending physician and public health officials collaborate in long-term management of a potentially communicable disease such as tuberculosis.

. . . *on antimicrobial therapy*

A loss of complacency regarding the treatment of tuberculosis in the last few years, with a striving for 100 per cent success, is noted by the Committee on Therapy of the American Trudeau Society in a statement on Antimicrobial Therapy of Tuberculosis, published in the October issue of THE AMERICAN REVIEW OF TUBERCULOSIS AND PULMONARY DISEASES.

Since the last statement on the subject, in 1955, the committee states that there has been a change from the sense of satisfaction in achieving excellent results in from 70 to 90 per cent of cases of tuberculosis "to a sense of dissatisfaction with the 10 to 30 per cent of treatment failures."

In discussing the drugs in use today, the committee states that isoniazid is considered to be the most effective. It points out that, because patients differ in the manner they metabolize isoniazid, a determination of blood serum levels of active isoniazid may become important "if work now in progress confirms current theories."

As for three recently reported drugs—streptovaracin, kanamycin, and thiocarbanidine—the committee states that they "cannot be recommended for use in the treatment of tuberculosis at the present time except under conditions of experimental control."

"At the present time," the committee states, "it must be concluded that the best drug treatment for tuberculosis consists of combinations of the three standard drugs, streptomycin, PAS, and isoniazid, used for long periods of time, 18 to 24 months. The use of isoniazid alone as initial treatment is not recommended by this committee. Studies comparing the therapeutic effectiveness of isoniazid alone with isoniazid plus PAS in the treatment of minimal and moderately advanced noncavitary tuberculosis are now in progress. Thus far no conclusive evidence has been presented which proves that isoniazid used alone is equal in therapeutic effectiveness to isoniazid combined with other antituberculosis agents. Other combinations, including pyrazinamide, cycloserine, and viomycin, are recommended when combinations of standard drugs cannot be used for one reason or another." Dr. William R. Barclay, of Chicago, was committee chairman.

SCIENTISTS AT WORK

"Research is both an art and a science. The investigator must have the knowledge and technical skill of the scientist. He must also have the imagination—one might even say the intuition—of the artist."

The speaker was a slight woman with keen eyes and dark hair faintly streaked with gray, who wore the white gown of the laboratory worker with the grace of one completely at home among fruit jars filled with strange-colored solutions instead of jams and jellies; among microscopes and Petri dishes and Bunsen burners.

Florence B. Seibert, Ph.D., was sitting on a stool in her laboratory at the Henry Phipps Institute of the University of Pennsylvania, Philadelphia, as she talked. At one point she got up to turn on an electric switch which set in motion a formidable-looking machine. The machine was plainly the pride of the laboratory, for cumbersome though it seemed to the uninitiate, it could unerringly pick out and separate specific molecules from body fluids.

An electrophoresis apparatus, it was modeled after one which won a Nobel prize for Arne Tiselius, with whom Dr. Seibert had worked under a Guggenheim Fellowship in Upsala, Sweden, in 1937. It was a piece of equipment of inestimable value to a biochemist like Dr. Seibert, whose work with protein molecules led to a superior tuberculin and who is now seeking information about immunity by studying polysaccharides.

Trudeau Medalist and world renowned for her work with tuberculin, Dr. Seibert is the dean of investigators receiving medical research grants from the National Tuberculosis Association. Her association with the NTA goes back, in fact, to one of the first four grants made by the NTA. The grant was to Dr. Esmond R. Long, who needed the services of a biochemist to assist him in the studies of the nutrition of the tubercle bacillus at the University of Chicago. Dr. Seibert, fresh from her doctorate at Yale, joined him in 1924. This was the team that isolated the active principle of tuberculin, the first step in the development of a pure, standardized substance that is used throughout the world in finding tuberculosis infection.

Hospitals in the United States cared for 22,993,000 patients in 1957—more than in any previous year and an increase of more than 900,000 from the 1956 total of 22,089,000, according to the American Hospital Association. On any given day in 1957, an average of 1,320,000 patients and 48,775 newborn infants were hospitalized.

In 1957, according to the AHA study, an average of 107 personnel were employed in all hospitals per 100 patients, compared with 101 in 1956. This average included a range from 218 personnel per 100 patients in voluntary short-term hospitals to 32 per 100 patients in non-federal psychiatric hospitals.

Tuberculin, and its ability to produce a skin reaction in persons infected with tubercle bacilli, had been discovered by Robert Koch, who prepared it from the broth in which tubercle bacilli had been grown. What it was in the crude substance that caused the reaction was not known, but protein was suspected.

To put the theory to the test, Dr. Long devised a synthetic culture medium free from protein. When tubercle bacilli grown in it had been filtered out, analysis of the liquid medium revealed that it now contained protein — obviously a product of the bacilli. Tests showed that the liquid could elicit the tuberculin reaction after, but not before, the appearance of the protein; thus it was shown that protein is the active principle of tuberculin.

Dr. Seibert proceeded to crystallize a protein that caused the reaction, and the tuberculin subsequently prepared was given the name Purified Protein Derivative, or, as it is commonly called, PPD. The "derivative" was added because it was not certain whether the reaction was caused by the entire protein molecule or a part of one. Later studies by Dr. Seibert have shown that there are several proteins in tuberculin and that more than one can elicit the skin reaction.

Since 1932 Dr. Seibert has carried on her research at the Henry Phipps Institute. It was in 1939 that she made the standard PPD (known as PPD-S), by which batches of tuberculin are still tested here and abroad.

The preceding year, in 1938, Dr. Seibert had become the first woman to receive the Trudeau Medal. Many other honors have come to her for her scientific achievements, but neither fame nor honor has ruffled the modesty of this indefatigable investigator, who moves about her laboratory with a slight limp, the result of polio in childhood, and with eyes that literally glow as the solution of a problem begins to draw near.

Watching her, one knows that in her the sensitivity of the artist has been combined with the skill of the scientist.—A. S. F.

Florence B. Seibert, Ph.D.

Air Pollution Meeting

The first National Conference on Air Pollution will be held in Washington, D.C., November 18-20, by the U.S. Public Health Service. The purpose of the conference is to bring together experts in this field from government, industry, and voluntary organizations to determine what effects air pollution has upon the health of man and to advise Surgeon General Leroy E. Burney about future control programs. The National Tuberculosis Association will be among the voluntary agencies represented at the meeting.

New Trudeau Society

The Oregon Trudeau Society was organized on May 14 as the medical section of the Oregon Tuberculosis and Health Association. The following officers were elected: president, Dr. William Cohen, Portland; president-elect, Dr. Donald E. Olson, Portland; secretary-treasurer, Dr. Walter A. Noehren, Sandy. This brings the number of state Trudeau societies to 38.

Jack Gleason has been appointed an associate in the Seal Sale Division of the National Tuberculosis Association. Mr. Gleason was formerly Seal Sale consultant with the Louisiana Tuberculosis Association.

Miss Lynn Riehman has been appointed an associate in the Rehabilitation Division of the National Tuberculosis Association. She was formerly a psychiatric social worker, Out-Patient Department, Psychosocial Vocational Services, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center.

Dr. Chevalier Jackson, who gained international fame for developing the bronchoscope, died in August at the age of 92.

L. Max Gardner, formerly Seal Sale director and legal consultant for the Illinois Tuberculosis Association, has been appointed executive director of the Northampton County (Pa.) Tuberculosis and Health Society.

Mrs. Catherine B. Michel, who has been executive secretary of the Erie County (Ohio) Tuberculosis and Health Association since 1928, was awarded a Certificate of Honor, in May, by the Ohio Public Health Association for "thirty years' meritorious service" to Ohio citizens in the field of public health.

Miss Betty Zatterstrom, who has been a staff member of the Christmas Seal Division of the New York Tuberculosis and Health Association for the past eight years, has been appointed Seal Sale director of the Colorado Tuberculosis Association.

Mrs. W. Terry Oliver, who had previously been employed in the personnel field, was appointed executive director of the Tuberculosis and Health Association of Stamford Area (Conn.) on July 1. She succeeds **Marvin Burton,** who has joined the Public Health Department of the Equitable Life Assurance Society.

As part of a long-range expansion to help communities cope with changing health needs, the American Public Health Association has filled five newly created key staff positions: **Dr. Thomas Hood,** formerly executive secretary of the Kansas State Board of Health, has been named associate executive director. **Dr. James L. Troupin,** who has been working on professional education problems with the World Health Organization, in Geneva, has been named associate director assigned to the Committee on Professional Education. **Robert Mytinger,** formerly secretary of the public health committee of the Paper Cup and Container Institute, is the first director of the APHA's recently created Western Regional Office, in San Francisco. **Edward Wellin,** formerly research associate at the Harvard School of Public Health, is chief investigator for a three-year study on the relation between public health and the behavioral sciences. As announced in the June BULLETIN, **Noble Swearingen,** formerly chief of legislative information for the National Tuberculosis Association, is director of the APHA's recently created Washington office.

Frank J. Palmer, formerly program director of the Cattaraugus County (N.Y.) Tuberculosis and Public Health Association, has been promoted to executive director.

Mrs. Estella M. Harris has resigned as executive secretary of the Columbia County (Ore.) Tuberculosis and Health Association. She has been replaced by **Mrs. Harold Shadley.**

Joseph Brady has been appointed executive director of the Kankakee County (Ill.) Tuberculosis Association, following several months' training in tuberculosis control activities with the Illinois Tuberculosis Association. He succeeds **Leonard Simon,** who has received a U.S. Public Health Service fellowship for graduate work in public health.